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Original article

Phytochemistry and insecticidal effect of different parts of *Melissa officinalis* on *Tetranychus urticae*

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Abstract

Background and objectives: In recent years, biological control of parasites by essential oils (EOs) derived from plants is one of the alternatives to synthetic pesticides. *Melissa officinalis* from Lamiaceae family is distributed in many parts of Iran. It is known as an excellent source of antioxidants, antibacterial, antiviral and antifungal constituents. The present study investigated the insecticide properties of *M. officinalis* against *Tetranychus urticae* tick. **Methods:** The EO of different parts of plant was extracted and analyzed by gas chromatography and mass spectrometry (GC/MS). The ticks were placed on the filter paper in the bottom of a petri dish (9 mm), and contact toxicity assay was then performed by contacting the extract with the ticks. **Results:** The EO of leaves showed the most potent insecticidal effect while the stem EO demonstrated the weakest effect. The lowest concentration of EO from the leaves showed more considerable insecticide activity compared to the highest concentration of stem and flower EOs. **Conclusion:** *Melissa officinalis* is an effective insecticide with potent effect against *T. urticae* and it could be suggested as a natural pesticide against *T. urticae*.

Keywords: essential oil, insecticidal effect, *Melissa officinalis*, *Tetranychus urticae*